ABB i-bus® KNX
Energy Module, MDRC
EM/S 3.16.1, 2CDG 110 148 R0011


2CDC 071 009 S0012

The Energy Module is a modular installation device in Pro *M* design for installation in the distribution board.
The load current per output is 20 A.

The connection of the outputs is implemented using universal head screw terminals. Each output is controlled separately via the KNX.

Individual outputs can be copied or exchanged to reduce the programming effort.

The parameterization is undertaken via the ETS. The connection to the KNX is implemented using the bus connection terminal on the front.

Technical data

Supply	Bus voltage	21…30 V DC
	Current consumption via bus	< 12 mA
	Power consumption via bus	Maximum 250 mW
	Power consumption on mains	≤ 0.7 W
Mains inputs (terminals 1, 3, 5)	Floating	3 x
	U_n rated voltage	250/440 V AC (50/60 Hz)
Load outputs (terminals 2, 4, 6)		3 x
	I_n rated current	16/20 A
	Device leakage loss at 3 x 16 A	3.0 W
	Device leakage loss at 3 x 20 A	4.2 W
Measuring range	Active consumption/active power	5.7 W…4,600 W (U_n = 230 V) 2.8 W…2,300 W (U_n = 115 V)
	Current (AC)	0.025…20 A
	Voltage (AC)	95…265 V
	Frequency	45…65 Hz
Accuracy[1)]	Active consumption/active power (250…500 mA)	± 6 % of actual value
	Active consumption/active power (500 mA…5 A)	± 3 % of actual value
	Active consumption/active power (5…20 A)	± 2 % of actual value
	Current (0.025…20 A)	± 1 % of actual value and ±10 mA
	Voltage (95…265 V)	± 1 % of actual value
	Frequency (45…65 Hz)	± 1 % of actual value
Starting current	25 mA	
Connections	KNX	Via bus connection terminals, 0.8 mm Ø, solid
	Load current circuits (1 terminal per contact)	Universal head screw terminal (PZ 1) 0.2… 4 mm² stranded, 2 x 0.2…2.5 mm² 0.2… 6 mm² solid, 2 x 0.2…4 mm²
	Ferrules without/with plastic sleeves	0.25…2.5/4 mm²
	TWIN ferrules	0.5…2.5 mm² Contact pin length min. 10 mm
	Tightening torque	maximum 0.6 Nm
Operating and display elements	Button/LED	For assignment of the physical address
Enclosure	IP 20	To DIN EN 60 529
Safety class	II, in the installed state	To DIN EN 61 140

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Isolation category	Overvoltage category	III to DIN EN 60 664-1
	Pollution degree	2 to DIN EN 60 664-1
KNX safety extra low voltage	SELV 24 V DC	
Temperature range	Operation	-5 °C…+45 °C
	Storage	-25 °C…+55 °C
	Transport	-25 °C…+70 °C
Ambient conditions	Maximum air humidity	93 %, no condensation allowed
Design	Modular installation device (MDRC)	Modular installation device, Pro *M*
	Dimensions	90 x 72 x 64.5 mm (H x W x D)
	Mounting width in space units (modules at 18 mm)	4
	Mounting depth in mm	64.5
Weight	in kg	0.16
Installation	On 35 mm mounting rail	To EN 60 715
Mounting position	As required	
Housing/colour	Plastic housing, grey	
Approvals	KNX to EN 50 090-1, -2	Certification
CE mark	In accordance with the EMC guideline and low voltage guideline	

[1)] The stated values apply only if no DC components are present. A DC component causes additional distortion of the measurement result.

Device type	Application program	Maximum number of communication objects	Maximum number of group addresses	Maximum number of associations
EM/S 3.16.1	Measure 3f/*	140	254	254

* … = current version number of the application program. **Please observe the software information on our homepage for this purpose.**

Note

For a detailed description of the application program see *Energy Module EM/S 3.16.1, MDRC* product manual. It is available free-of-charge at *www.abb.com/knx*.

The ETS and the current version of the device application program are required for programming.

The current application program can be found with the respective software information for download on the Internet at *www.abb.com/knx*. After import it is available in the ETS under *ABB/Energy management/Energy module*.

The device does not support the locking function of a KNX device in the ETS. If you inhibit access to all devices of the project with a *BCU code*, it has no effect on this device. Data can still be read and programmed.

Note

Current values less than 25 mA are indicated as a 0 mA value on the KNX (starting current). For small load currents that are just above the minimum detection threshold of 25 mA, it is possible that a value of 0 mA is displayed due to the inaccuracies, even though a current is flowing.

The Energy Module is only suitable for recording measured values of *Loads*, i.e. the meters only record positive energy. Negative power values are discarded with load control, and negative instrument and power values (feedback) cannot be monitored with thresholds.

Important

With communication objects that can be written via the bus (e.g. threshold value limits), the range of values is not limited, i.e. even if the values that can be entered in the ETS for a threshold value or load limit can only be entered within defined limits, any value can be written to the communication object over the bus. It is therefore necessary to ensure that only permitted and useful values can be written to the communication object.

If the threshold value monitoring is to be used for equipment fault detection that only causes a slight change of less than 30 mA (7 W), mains voltage and current fluctuations due to ambient influences (e.g. temperature) and natural ageing of the load play a significant role. Even when these current changes are detected by the Energy Module, the detected current changes do not necessarily mean that a device has failed.

The outputs are electrically isolated from each other, i.e. they can be connected to different phase conductors within the voltage ranges permitted in the technical data. There may not be potential differences between the neutral conductor connection of the load and the neutral conductor connection on the Energy Module to ensure that useful measured values are delivered.

(Also refer to the note under Circuit diagram, page 4.)

⚠ Danger

In order to avoid dangerous touch voltages, which originate through feedback from differing phase conductors, all-pole disconnection must be observed when extending or modifying the electrical connections.

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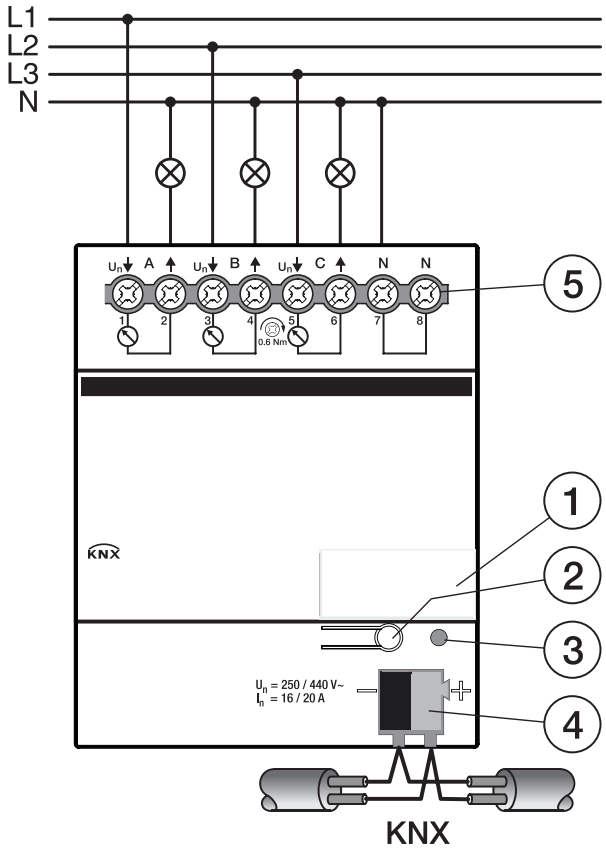
Circuit diagram



1 Label carrier
2 Button *Programming*
3 LED *Programming* ● (red)
4 Bus connection terminal
5 Load circuits (A…C) each with 2 screw terminals, neutral conductor (N)

Important
Mains voltage must be present on at least one output, and the neutral conductor must be connected for supplying power to the measurement section.
No load currents may be conducted via the N terminal on the device.
Terminals 7 or 8 should be connected directly to the N busbar.
The second N terminal can be used to loop to further Energy Modules.

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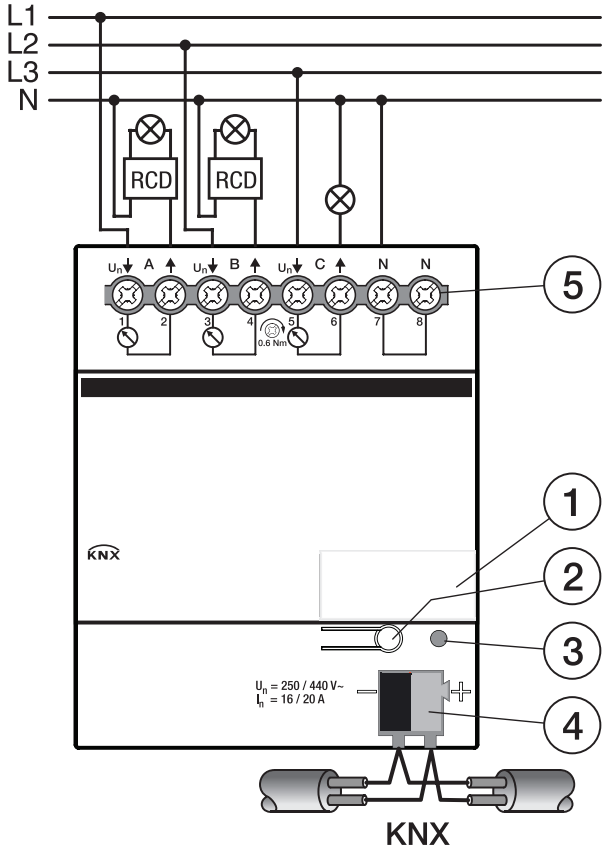
Connection example

If the outputs of the Energy Module are to be individually protected against residual currents, the RCD (earth-leakage circuit breaker) must be connected as follows.



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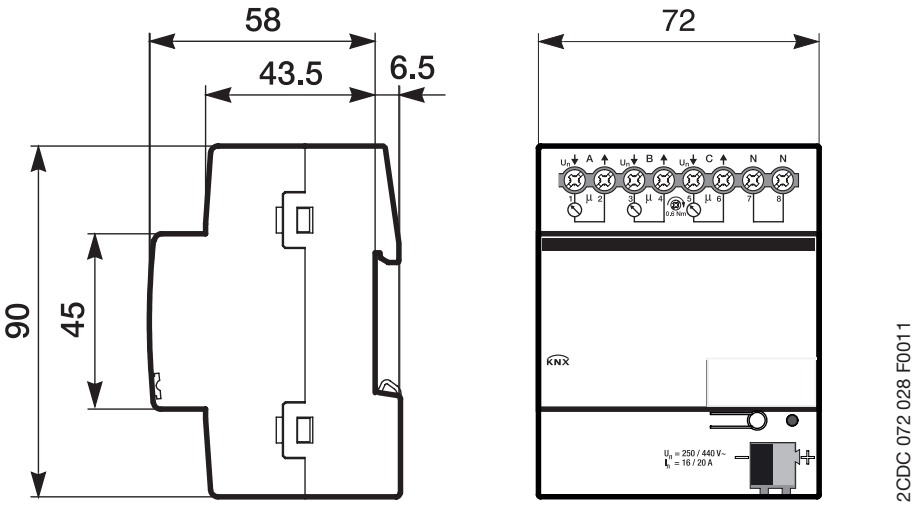
Dimension drawing



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